INFORMATION SHEET

ORDER NO. R5-2005-XXX
ROCKWELL INTERNATIONAL CORPORATION
AND PORTERVILLE UNIFIED SCHOOL DISTRICT
GROUNDWATER CLEANUP SYSTEM
TULARE COUNTY

Rockwell International Corporation and the Porterville Unified School District (hereafter jointly referred to as Discharger) applied for permit renewal to discharge wastewater under the National Pollutant Discharge Elimination System (NPDES).

Rockwell International Corporation has the responsibility to cleanup groundwater contaminated with volatile organic compounds (VOCs) in the vicinity of the School District's property, about two miles northeast of Porterville.

The School District's property consists of approximately 35 acres of land adjacent to and east of State Highway 65. Water and gas meter manufacturing facilities were originally constructed on the property in 1956 by the Porterville Development Board per specifications developed by Rockwell Manufacturing Company who leased the property until 1971 when Rockwell International Corporation purchased the property. In 1975, the property was purchased by INCOM and used for manufacturing marine cable until August 1982. Mr. Albert Levinson, defined by Waste Discharge Requirements (WDRs) Order No. 96-106 as a Discharger, purchased the site in 1983. In 2000, the Porterville Unified School District (School District) purchased the property from the Levinson Estate. The Porterville Unified School District currently leases the property to various entities that use it exclusively for warehousing needs. Rockwell Manufacturing Company and Rockwell International Corporation both contributed to the groundwater pollution.

Two distinct aquifer zones have been delineated in the upper 160 feet of alluvial sediments. The upper aquifer originates about 50 feet below ground surface (bgs) and extends to about 100 feet bgs. The lower aquifer occurs below a depth of about 130 feet and ranges in thickness from about five to thirty feet.

Investigation of the upper aquifer in the vicinity and downgradient of the property identified the lateral extent of the pollution. In 1991, two private wells outside of the property boundaries were identified as potential conduits to the lower aquifer and were properly abandoned. The VOC plume is within the upper aquifer and roughly 30 feet thick, 550 feet wide, and 900 feet long.

In May 1991, the Discharger installed a groundwater cleanup system (GWCS) consisting of an extraction well (REX-1), a scale inhibitor system, an air-blower and packed tower aeration air-stripping tower (PTA), and dual-vessel vapor phase granular activated carbon (GAC) adsorbers. In June 1998, the Discharger removed the GAC adsorbers because the San Joaquin Valley Air Pollution Control District allowed for the direct discharge of the air-stripper vapor without GAC polish. In 2001, the Discharger added an additional extraction well (REX-2). In 2002, the Discharger replaced the PTA with a low profile tray design air-stripper (model No. STAT 180). The low-profile tray air stripper uses counter-current flow to remove dissolved volatile organic compounds (VOCs) from groundwater as it is sprayed over and trickles through a five-tray system. A scale inhibitor prevents formation of inorganic

deposits in the air-stripper. The GWCS is designed to hydraulically contain the plume and control migration of the pollutants. The treated groundwater is discharged to Pioneer Ditch about 220 feet east of the northeastern corner of the property.

Pioneer Ditch is a pressurized subterranean pipeline used to convey irrigation and recharge waters from Success Dam, east of Porterville, to agricultural lands along its eleven-mile length. The pipeline terminates about two miles north of the School District 's property. Roughly one-third of a mile from its terminus, surplus water flows from Pioneer Ditch into an unlined cross connection, approximately one mile long, which connects with Canal No. 4, operated by the Lower Tule River Irrigation District. The discharge to Pioneer Ditch is currently distributed by the Lower Tule River Irrigation District for irrigation.

Canal No. 4 conveys irrigation waters between Porterville and Corcoran. As part of this conveyance, the water flows through a segment of the North Fork of the Tule River, which is approximately eight miles in length. It is likely that the treated groundwater may at times be discharged into the North Fork of the Tule River, a water of the United States and a tributary to the Tule River.

During normal conditions, flow in the Pioneer Ditch is from Success Dam “downstream” towards the Levinson Property. However, in order to supply agricultural water to farms “upstream,” occasionally the Lower Tule River Irrigation District may adjust the pressure of the Pioneer Ditch, which reverses the direction flow in the Pioneer Ditch.

History of Compliance with Effluent Limitations

Effluent monitoring data submitted by the Discharger for the period June 1996 through January 2004 was evaluated for compliance with effluent limitations of WDRs Order 96-106. The discharge exceeded the effluent limitations on the following occasions:

	Units	1,1-DCE	1,1-DCA	1,2-DCA	Methylene Chloride	1,1,1-TCA	TCE	PCE
Order 96-106 Effluent Limitation		3.0	0.5	0.5	1.0	1.0	0.5	0.5
No. of Exceedances		4.0	4.0	0	0	0	3	2
Date Exceeded/Concentration								
8/3/1997	µg/L	37	1.5	--	--	--	--	--
10/20/1999	µg/L	42	2	--	--	--	1.1	2.1
11/7/2002	µg/L	36	5.1	--	--	--	2.1	2.6
11/7/2002	µg/L	7.2	2.3	--	--	--	--	--

12/10/2002	µg/L	--	--	--	--	--	0.7	--

Effluent Limitations and Monitoring

Federal regulations, 40 CFR Part 122.44 (d)(1)(i), require that NPDES permit effluent limitations must control all pollutants which are or may be discharged at a level which will cause or have the reasonable potential to cause or contribute to an in-stream excursion above any State water quality standard, including any narrative criteria for water quality. Beneficial uses, together with their corresponding water quality objectives or federally promulgated water quality criteria, are defined per federal regulations as water quality standards.

State Water Resources Control Board Resolution No. 68-18 requires implementation of Best Practicable Treatment and Control (BPTC) to ensure that the highest water quality is maintained consistent with the maximum benefit to the people of the State. Federal Regulations require effluent limits representing best available technology economically feasible (BAT) for all toxic pollutants. For treatment of VOCs associated with groundwater cleanups, BAT is consistent with BPTC. BAT based on Regional Board staff's best professional judgment, and BPTC for groundwater cleanup of VOCs provides that the pollutants should be discharged at concentrations less than quantifiable levels for each pollutant.

The effluent limitations consider BPTC for VOC removal, the historical performance of the on-site treatment system, receiving water conditions, and USEPA Method quantitation limits and are less than California Primary Maximum Contaminant Levels.

The following major revisions to previous Order 96-106 have been made to this Order:

- Technology-based effluent limitations for 1,1-DCE, PCE, methylene chloride and 1,1,1-TCA were made more stringent based on Best Practicable Treatment and Control. Effluent limits of <0.5 µg/L are included as opposed to 3 µg/L for 1,1-DCE, 2 µg/L for PCE, 1.0 µg/L for methylene chloride and 1.0 µg/L for 1,1,1-TCA.

- Technology-based effluent limitations of <0.5 µg/L were established for "Other Volatile Organic Compounds" listed in Appendix 4 of the Implementation Policy.

- Water quality-based monthly average effluent limits were established for 1,2-DCA and 1,1-DCE of 0.38 µg/L and 0.057 µg/L, respectively.

- Acute toxicity effluent limitations were added to the proposed Order in accordance with Basin Plan requirements.

- Receiving water limitation for EC of not to exceed 450 µmhos/cm during the irrigation season was added to the proposed Order in accordance with Table III-2 of the Basin Plan.

- Daily maximum effluent limitations for EC, boron, and chloride of 1000 µmhos/cm, 1.0 mg/L and 175 mg/L, respectively, were added in accordance with the Implementation Requirements for Discharges to Navigable Waters contained in the Basin Plan.

- Effluent limitations for bis(2-ethylhexyl) phthalate, 1,2 Dichloropropane, trans 1,2 Dichloroethylene, cis 1,2-Dichloroethylene and Freon 113 (Trichlorotrifluoroethane) were removed from this Order.

- Monitoring and Reporting Program (MRP) No. R5-2005-XXXX requires the Discharger to monitor the flow monthly. The previous Order required daily reporting of flow. The Discharger has stated that since there is not a recording flow meter at the site, reporting daily flow rates would entail daily visits to the facility that would be impractical. Currently, the combined flow capacity of the extraction wells cannot physically exceed the flow limitation of 0.288 mgd (200 gpm) prescribed by this Order. However, if the Discharger expands the flow capacity of the GWCS, MRP No. R5-2005-XXXX requires the Discharger to monitor the flow continuously.

- This Order reduces the monitoring requirements from bi-monthly to monthly for pH and all VOCs.

- Monitoring requirements were established for "Other Volatile Organic Compounds" listed in Appendix 4 of the Implementation Policy.

- Monitoring and requirements for all priority pollutants at least once during the term of this Order and at least 180 days prior to the expiration of this Order, as set forth in the Implementation Policy.

- Quarterly monitoring requirements were established for chronic toxicity testing. The Order allows the Discharger to request to cease conducting chronic toxicity testing provided the test results indicates the discharge does not cause toxicity.

- Receiving water monitoring is being established to monitor for EC in accordance with the Basin Plan.

- Influent monitoring requirements have been established under this Order

Reasonable Potential Analysis

In accordance with the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (hereafter referred to as the Implementation Policy), on 8 May 2001 and 23 October 2001 the Discharger reported the analytical results of the discharge for 126 priority pollutants, pH, hardness, and flow, respectively. The Discharger also submitted analytical results of the discharge for each of the 17 TCDD congeners listed in Table 4 of the Implementation Policy.

A Reasonable Potential Analysis (RPA) in accordance with the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the SIP) for CTR constituents, and the *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001) (TSD) for non-CTR constituents was conducted on the data to determine whether the discharge will cause, have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs, the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standards for the following CTR constituents: 1,1-DCA, 1,2-DCA, 1,1-DCE, PCE and TCE.

The Discharger submitted limited data for non-volatile CTR and non-CTR constituents that does not provide sufficient information for the Regional Board to determine reasonable potential for arsenic, chromium III, chromium VI, mercury, selenium, zinc, ammonia, nitrate, sulfate, barium and magnesium. This Order establishes monitoring requirements for these constituents and includes a re-opener to allow the Board to establish effluent limitations if necessary based on the monitoring results.

Monitoring data used to conduct the reasonable potential analysis consisted of influent and effluent data (including data provided in the special monitoring study required by the Implementation Policy), and influent and effluent data provided in the RWD. The maximum detectable concentrations reported by these data sets are summarized as follows:

Sampling Type	Units	1,1-DCE	1,1-DCA	1,2-DCA	Methylene Chloride	1,1,1-TCA	TCE	PCE	Trichloro-fluoromethane
M&RP Influent Monitoring Data	µg/L	140	6.1	27	1.8	2.4	3.1	4.6	1.2
M&RP Effluent Monitoring Data	µg/L	42	5.1	ND	1	ND	2.1	2.6	ND
RWD Data	µg/L	127.3	15.8	4.3	ND	4.4	8.3	10.1	ND
Maximum	µg/L	140	15.8	27	1.8	4.4	8.3	10.1	1.2

Sampling Type	Units	1,1-DCE	1,1-DCA	1,2-DCA	Methylene Chloride	1,1,1-TCA	TCE	PCE	Trichloro-fluoromethane
Concentration used in RPA									

A summary of all the monitoring data used to conduct the RPA is provided in Tables 1 and 2 attached to this Information Sheet. A summary of the RPA analysis for all constituents reported in detectable concentrations is in Table 3 (attached).

Water quality based effluent limitations (WQBELs) calculated for these constituents, based on the most restrictive water quality objectives and the methodology presented in the Implementation Policy, are summarized below:

		Most Stringent WQBEL	
Constituent	Units	Daily Max	Monthly Average
1,1-DCE	µg/L	0.11	0.057
1,1-DCA	µg/L	10.5	5
1,2-DCA	µg/L	0.76	0.38
1,1,1-TCA	µg/L	402	200
1,1,2-TCA	µg/L	1.21	0.6
PCE	µg/L	1.61	0.8
TCE	µg/L	5.43	2.7
Methylene Chloride	µg/L	5.03	2.5
Trichlorofluoromethane	µg/L	301.5	150
Chloroform	µg/L	2.21	1.1

Table 4 (attached) provides a summary of the final effluent limitations for each constituent and provides a summary of how each limit was calculated.

Technology-based Effluent Limits

Section 1.4 of the Implementation Policy requires that water quality based effluent limits be compared to technology-based effluent limits and that the more protective limit be applied in the permit. Therefore, technology-based effluent limits must be developed for each constituent. For establishing BAT based upon BPJ, 40 CFR 125 requires consideration of several specific factors. The following factors were considered:

Appropriate Technology for Category or Class of Discharges, Processes Employed, Engineering Aspects of Various Control Techniques. Air Stripping treatment systems are commonly used to

remove VOCs from extracted groundwater at cleanup sites. Systems are designed to remove VOCs to nondetectable concentrations. Properly operated and maintained systems perform reliably and ensure essentially complete removal of VOCs. Rockwell International Corporation employs an air stripper system. The scale inhibitor prevents formation of inorganic deposits in the low profile tray design air-stripper. The permitted flow is 200 gpm (0.288 mgd). Information provided in the RWD indicated the maximum discharge for the facility has been 100 gpm (0.144 mgd) and the average flow has been 56 gpm (0.08 mgd).

Age of Equipment. In May 1991, the Discharger installed a scale inhibitor system, an air-blower and packed tower aeration air-stripping tower (PTA), and dual-vessel vapor phase granular activated carbon (GAC) adsorbers. In June 1998, the GAC adsorbers were removed because the San Joaquin Valley Air Pollution Control District allowed for the direct discharge of the air-stripper vapor without GAC polish. In 2002, the Discharger replaced the PTA with a low profile tray design air-stripper (model No. STAT 180).

Influent and Effluent Data. The SMR data provided by the Discharger indicates that its air stripper effluent VOC concentrations are generally below detection limits of 0.5 µg/L, and thus will meet the proposed effluent limits. The Regional Board assumes that the exceedances of the detection limits are likely attributable to lack of timely maintenance.

Unique Factors Relating To The Applicant. Rockwell International Corporation has not identified any unique factors that would justify discharges equaling or exceeding quantifiable concentrations of VOCs.

Non-Water Quality Environmental Impacts, Including Energy Requirements; Cost Of Achieving Proposed Effluent Reduction. The system currently in place reliably removes VOCs to nondetectable concentrations of <0.5 µg/L, therefore, implementation of the proposed limits would not create additional non-water quality impacts, or financial costs for Rockwell International Company.

The above supports a conclusion that the limits of <0.5 µg/L as a daily maximum reflects BPTC/BAT.

The technology-based standard for cleanup of VOCs in groundwater with an airstripper, GAC, or combination treatment system is that all effluent should be discharged with unquantifiable levels of VOCs in the effluent. For VOCs of concern, the MLs listed in Appendix 4 of the Implementation Policy represent the minimum quantifiable levels of these constituents and serve as the technology-based effluent limits. A summary of the TBELs is listed below:

Constituent	Units	TBEL

1,1-DCE	µg/L	<0.5
1,1-DCA	µg/L	<0.5
1,2-DCA	µg/L	<0.5
1,1,1-TCA	µg/L	<0.5
1,1,2-TCA	µg/L	<0.5
PCE	µg/L	<0.5
TCE	µg/L	<0.5
Methylene Chloride	µg/L	<0.5
Trichlorofluoromethane	µg/L	<0.5
Chloroform	µg/L	<0.5

Final Effluent Limits

The more stringent of the technology-based or water quality based effluent limits has been implemented as the effluent limit in this Order for each constituent. A comparison of the TBEL and WQBEL for each constituent is provided below:

		WQBEL Limit		TBEL Limit	
Constituent	Units	Daily Max	Monthly Average	Maximum	Most Stringent Effluent Limit
1,1-DCE	µg/L	0.11	0.057	<0.5	0.057
1,1-DCA	µg/L	10.5	5	<0.5	<0.5
1,2-DCA	µg/L	0.76	0.38	<0.5	0.38
1,1,1-TCA	µg/L	402	200	<0.5	<0.5
1,1,2-TCA	µg/L	1.21	0.6	<0.5	<0.5
PCE	µg/L	1.61	0.8	<0.5	<0.5
TCE	µg/L	5.43	2.7	<0.5	<0.5
Methylene Chloride	µg/L	5.03	2.5	<0.5	<0.5
Trichlorofluoromethane	µg/L	301.5	150	<0.5	<0.5
Chloroform	µg/L	2.21	1.1	<0.5	<0.5

TDS, Conductivity, Boron and Chloride

Salinity, total dissolved solids (TDS), and EC are measures of dissolved salts in water. Salinity is a measure of the mass fraction of salts (measured in parts per thousand), whereas TDS is a measure of the concentration of salts (measured in mg/L). Since the EC of water generally changes proportionate to changes in dissolved salt concentrations, EC is a convenient surrogate measure for TDS.

Page IV-9, Discharges to Navigable Waters, of the Basin Plan requires at a minimum, dischargers to surface waters, including streams, to comply with the following effluent limits:

- Maximum EC not to exceed the quality of the source water plus 500 μmhos/cm or 1,000 μmhos/cm, whichever is more stringent, and

- Discharges shall not exceed an EC of 1,000 μmhos/cm, a chloride content of 175 mg/L or a boron content of 1.0 mg/L.

The Discharger under the previous Order 96-106 has monitored EC. The maximum value reported was 985 μmhos/cm, and the average concentration was 740 μmhos/cm for the monitoring period January 1999 through September 2003. To comply with Section IV of the Basin Plan, this Order establishes a maximum EC effluent limitation of 1,000 μmhos/cm. As this Order establishes a limit for EC, and EC is a surrogate for TDS, an effluent limitation for TDS has not been included in this Order.

This Order also establishes effluent limits for chloride and boron in accordance with the Basin Plan, Section IV. These limitations are established in this Order as maximum limitations. The air stripping process does not add EC, chloride or boron. Therefore the effluent concentrations for these constituents should be the same as the influent concentrations. This Order assigns EC, chloride and boron limitations and monitoring to gather information, and may be re-opened to include more stringent EC, chloride and boron limitations should future monitoring indicate the need.

Antidegradation and CEQA Considerations

The permitted discharge is consistent with the anti-degradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution No. 68-16. Best practicable treatment and control for cleanup of groundwater polluted by volatile organic compounds is to remove all pollutants to below applicable detection limits. All VOCs are required to be removed to a level below corresponding analytical quantitation limits. Some resulting degradation of the receiving water could occur if constituents were present below the quantitation limit, but such degradation would not be quantifiable. Due to the relatively low EC and TDS values of the receiving water, during periods of unusually limited dilution, some degradation of the receiving water may occur from these pollutants, however, the

discharge will not cause an exceedance of water quality objectives or cause a significant impact on the beneficial uses of groundwater and surface water. The continued remediation of polluted groundwater, and the use of the treated groundwater for irrigation, both benefit the people of the state.

The action to adopt an NPDES permit is exempt from the provisions of California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.), in accordance with Section 13389 of the California Water Code.